

ABSTRACT

5 The present invention provides materials and methods which may be used to evaluate one or more different probes and select probes that are optimized for sensitivity and specificity for a particular target. In particularly preferred embodiments, the methods and compositions of the invention can be used to evaluate polynucleotide probes having different nucleotide sequences. The methods and compositions thereby allow a user to select a polynucleotide probe, *e.g.*, having a particular nucleotide sequence, that is optimized for sensitivity and/or for specificity for a particular target polynucleotide molecule. In particularly preferred embodiments, the methods and compositions can be used to evaluate a plurality of probes simultaneously, such as on a microarray.

10 Probes evaluated according to the methods of the invention can be selected for and used to detect a variety molecules, including a variety of of polynucleotides, such as genomic polynucleotides (*e.g.*, genomic DNA) and genomic transcripts (*e.g.*, mRNAs or cDNA sequences derived from there) as well as gene copy numbers of specific transcripts, single nucleotide polymorphisms, *etc.*

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